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EASTERN PACIFIC HALIBUT FISHERY, 1888-1966

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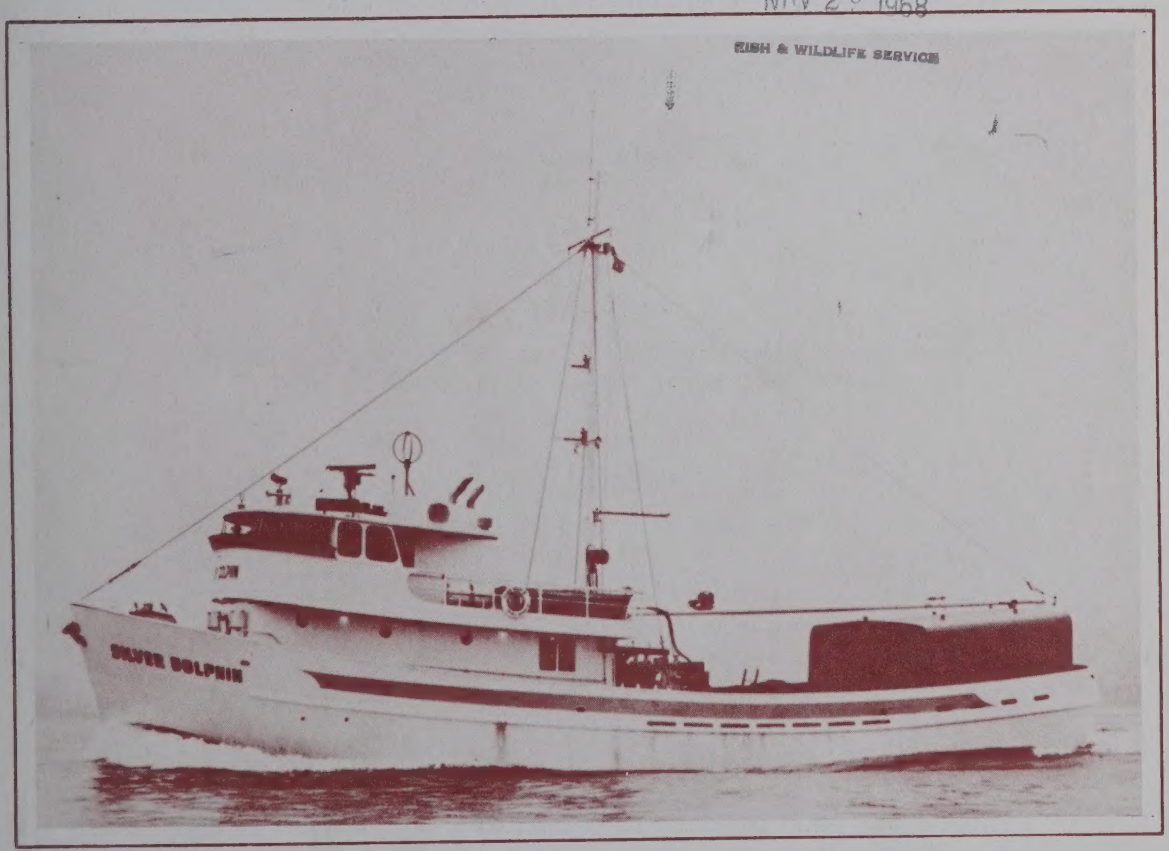

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF COMMERCIAL FISHERIES

Fishery Leaflet 602
Revised

Cover (courtesy "Pacific Fishermen"). A modern steel seine-boat type halibut vessel, capable of carrying a capacity of 260,000 pounds of iced halibut. The vessel can be adapted to multiple operations including bait fishing for tuna or seining for salmon or herring.

Please discard the original edition of this publication that was printed in September 1967.

This report was prepared for publication by the staff of the Branch of Fishery Statistics, Division of Economics.

UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. FISH AND WILDLIFE SERVICE
BUREAU OF COMMERCIAL FISHERIES

EASTERN PACIFIC HALIBUT FISHERY, 1888-1966

by

F. Heward Bell

Director, International
Pacific Halibut Commission

Fishery Leaflet 602
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PACIFIC HALIBUT SCHOONER

EASTERN PACIFIC HALIBUT FISHERY, 1888-1966

By

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The Pacific halibut, Hippoglossus hippoglossus stenolepis (Schmidt), is found on the Continental Shelf in boreal waters at temperatures from about 37° to 46° F. It is almost indistinguishable from the Atlantic halibut, H. hippoglossus, and any differences are probably varietal rather than specific.

Its recorded occurrence in the North Pacific extends on the east from Santa Rosa Island, Calif., to Norton Sound in the Bering Sea, across the Continental Shelf in Bering Sea, and off the Asiatic coast from the Gulf of Anadyr to Hokkaido. The North American range of the halibut setline fishery extends 3,000 miles from Northern California to St. Matthew Island in Bering Sea and in depth from about 20 to 250 fathoms.

The halibut is the largest of the flatfish, reaching a recorded maximum size of 495 pounds in the eastern Pacific--the present average landed size is about 30 to 35 pounds. The females are faster growing, and no male over 123 pounds has been caught to date. All data quoted in this text and accompanying tables refer to eviscerated heads-off weights.

From November to March, spawning concentrations of halibut occur at numerous locations along the edge of the Continental Shelf at depths from about 175 to 225 fathoms. The average age when the fish first become mature is about 12 years for females and probably 8 years for males. A large female may produce 2 to 3 million eggs annually.

The fertilized and developing eggs rising to mid-water levels hatch in about 15 days, and the postlarvae are transported many hundreds of miles by westward moving ocean currents. Thus the floating eggs are dispersed westward all along the coasts of British Columbia and Alaska and into the Bering Sea.

After about 6 months the postlarvae, having risen into the surface inshore drift, commence their bottom existence on the shoal sections of the shelf. The 1- to 3-year-old juveniles tend to remain on inshore grounds, then move offshore where they first enter the commercial setline fishery in significant numbers at about 5 to 7 years of age.

The Pacific fishery began in 1888 off Cape Flattery, Wash. From its inception, the fishery has been a joint venture of the fleets of Canada and the United States. By the turn of the century, the annual catch was about 10 million pounds. The unregulated fishery expanded rapidly, and in 1915 the catch reached 69 million pounds. Thereafter, in spite of increases in fishing effort and extension of the fishery throughout the commercial range of the halibut, the production declined to 44 million pounds by 1931.

On the basis of the declines in yields from the longer fished grounds, the industry advocated control of the fishery as early as 1915. Subsequent declines from newer grounds and end of World War I led to the eventual signing in 1923 and the ratification in 1924 of a halibut convention by the United States and Canada. The convention was directed chiefly to an investigation of the resource and development of measures for its rehabilitation. It established a joint commission now known as the International Pacific Halibut Commission.

Under the subsequent conventions of 1930, 1937, and 1953, regulations have been enacted each year since 1932. Those regulations have resulted in a threefold increase in size of the stocks on the grounds since 1932 and have enabled the fishery to make increased annual catches with progressively less fishing effort.

Landings by United States and Canadian fleets by sections of the coast are shown (in thousands of pounds) in table 3. The changing relative importance of each section has been influenced by depletion of nearby grounds and their subsequent controlled rebuilding, changes in the size, structure, and motive power of the fishing vessels, length of the fishing seasons, wartime conditions, relative port prices, and many other considerations.

Since 1960, receipts in Alaska and British Columbia ports have been well sustained, but in Washington State, landings both by United States and Canadian vessels have declined sharply, largely owing to relative port prices.

The catches from grounds off each section of the coast are shown in table 4. They reflect the early geographical expansion and intensification of the fishery, the subsequent declines from each section under uncontrolled fishing, and the increases under regulation after the early 1930's.

On grounds south of Cape Spencer (table 4, cols. B to D), the catch quotas have been temporarily reduced to offset the larger catches taken in the first half of the present decade while testing the upper range of what appeared to be the maximum sustainable yield. The ultimate optimum annual removal will probably be about 29 to 30 million pounds for this area.

On grounds west of Cape Spencer including Bering Sea (table 4, cols. E to G) removals were steadily increased to about 45 million pounds and, in view of stock reactions, are now being reduced to what may be an optimum sustainable level of about 40 million pounds. For the coast as a whole the maximum sustainable yield will probably be in the vicinity of 70 million pounds annually under present environmental conditions.

Recent annual Pacific and Atlantic catches of halibut (Hippoglossus) by countries are as follows:

Table 1

North Atlantic							
Year	Canada	United States	Norway	United Kingdom	USSR[1]	Other	Total
			(In millions of pounds)				
1961	6.1	.2	8.6	7.1	6.6	6.6	35.2
1962	6.1	.2	9.4	6.3	3.1	5.5	30.6
1963	4.9	.2	7.4	5.6	5.8	4.8	28.7
1964	4.6	.2	7.1	6.0	11.7	5.6	35.2
1965	4.5	.2	6.4	5.8	6.8	6.3	30.1
1966	5.0	.2	4.6	4.6	2.1	5.6	22.1

[1] USSR figures may include some flatfish other than Hippoglossus.

Table 2

North Pacific and Bering Sea					
Year	Canada	United States	Japan	USSR[1]	Total
		(In million of pounds)			
1961	29.5	40.1	18.5	-	88.1
1962	34.7	40.4	16.5	-	91.6
1963	37.1	34.3	17.1	3.8	92.3
1964	33.6	26.4	6.4	4.1	70.5
1965	33.0	30.5	4.9	3.0	71.4
1966	32.0	30.4	5.3	3.6	71.3

[1] USSR figures may include some flatfish other than Hippoglossus.

Without control the Canadian and United States catch in the eastern Pacific would probably have been in the vicinity of 30 million pounds annually, paralleling the conditions that have developed in the unregulated European Atlantic and the western Pacific Japanese halibut fisheries. It would have consisted, as in Europe, of a high proportion of young fish 2 to 4 years of age and under 5 pounds caught chiefly by trawl net gear and incidental to the catch of other species. In contrast, in the North American Pacific halibut fishery where all net-gear is prohibited, the catch consists of individuals chiefly from 6 to 25 years of age and weighing from 5 to over 200 pounds.

The rebuilt Pacific halibut fishery is the major source of income for about 250 U.S. vessels and 1,200 fishermen, 80 percent of whom maintain families in States of Washington or Alaska. Also, the rehabilitated stocks provide the market with better quality, larger sized fish and a more stable annual yield. Retail prices continue to be reasonable in relation to other high-quality animal protein as halibut production costs are relatively low due to the built-up stocks, use of improved gear and propulsion machinery, more effective bait, the installation of hydraulic deck controls, vessel refrigeration systems, and many other technological advances all leading to lowered manpower inputs and production costs.

The modest total investment of about $5 million that the two governments combined have appropriated to the Commission since 1930 has yielded extremely high and continuing economic returns. The cumulative gain in total catch in excess of what the unregulated fishery would have produced over the past 36 years has been worth at least $100 million in gross income to the fishermen.

This continuing high return on the investment is a constant reaffirmation of the wisdom and foresight manifested over 40 years ago by Canada and the United States when they contracted for the joint scientific management of the Pacific halibut fishery.

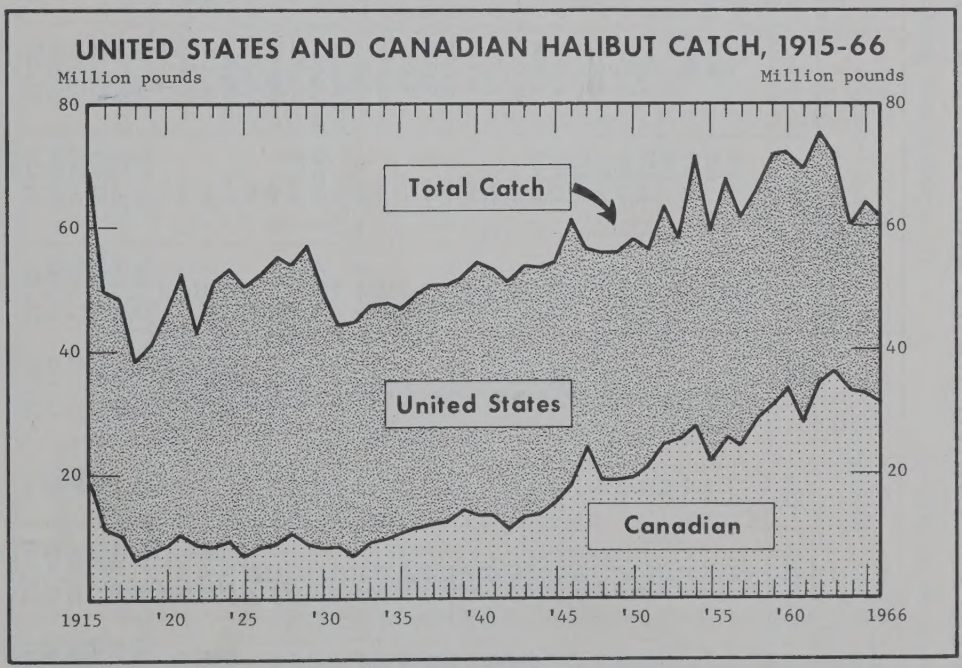


Table 3. -- UNITED STATES AND CANADIAN HALIBUT LANDINGS, 1888-1966 [1/]

(Thousands of pounds)

Year	Calif. and Oregon	Washington			British Columbia			Alaska			Pacific Coast		
	U.S.	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total
1888	[2]	[3]	--	[3]	--	246	246	[3]	--	[3]	1,220	246	1,466
1889	[2]	[3]	--	[3]	--	605	605	[3]	--	[3]	685	605	1,290
1890	[2]	[3]	--	[3]	--	633	633	[3]	--	[3]	740	633	1,373
1891	[2]	[3]	--	[3]	--	1,136	1,136	[3]	--	[3]	995	1,136	2,131
1892	[2]	[3]	--	[3]	--	1,358	1,358	[3]	--	[3]	1,411	1,358	2,769
1893	[2]	[3]	--	[3]	--	1,369	1,369	[3]	--	[3]	--	1,369	--
1894	[2]	[3]	--	[3]	--	1,730	1,730	[3]	--	[3]	--	1,730	--
1895	[2]	[3]	--	[3]	--	2,537	2,537	[3]	--	[3]	1,714	2,537	4,251
1896	[2]	[3]	--	[3]	--	2,281	2,281	[3]	--	[3]	--	2,281	--
1897	[2]	[3]	--	[3]	--	1,968	1,968	[3]	--	[3]	--	1,968	--
1898	[2]	[3]	--	[3]	--	--	1,970	[3]	--	[3]	--	--	--
1899	[2]	[3]	--	[3]	--	--	2,075	[3]	--	[3]	--	--	8,936
1900	[2]	[3]	--	[3]	--	--	3,598	[3]	--	[3]	--	--	--
1901	[2]	[3]	--	[3]	--	--	4,998	[3]	--	[3]	--	--	--
1902	[2]	[3]	--	[3]	--	--	7,312	[3]	--	[3]	--	--	22,343
1903	[2]	[3]	--	[3]	--	--	9,062	[3]	--	[3]	--	--	--
1904	[2]	[3]	--	[3]	--	--	12,180	[3]	--	[3]	--	--	28,077
1905	[2]	[3]	--	[3]	--	--	7,200	[3]	--	[3]	--	--	22,000
1906	[2]	[3]	--	[3]	--	--	9,950	[3]	--	[3]	--	--	--
1907	[2]	[3]	--	[3]	7,822	5,093	12,915	[3]	--	[3]	37,085	12,915	50,000
1908	[2]	[3]	--	[3]	7,820	8,072	15,892	[3]	--	[3]	--	8,072	--
1909	[2]	[3]	--	[3]	--	--	19,460	[3]	--	[3]	--	--	--
1910	[2]	[3]	--	[3]	--	--	19,387	[3]	--	[3]	--	--	51,850
1911	[2]	32,900	--	32,900	--	--	15,854	8,177	--	8,177	--	--	56,931
1912	[2]	28,938	--	28,938	--	--	21,127	10,369	--	10,369	--	--	60,434
1913	[2]	30,912	--	30,912	--	--	22,347	13,284	--	13,284	--	--	66,543
1914	[2]	36,712	--	36,712	--	--	21,444	9,269	--	9,269	--	--	67,425
1915	273	28,327	--	28,327	13,160	18,609	31,769	8,387	--	8,387	50,147	18,609	68,756
1916	253	16,104	--	16,104	14,538	12,185	26,723	6,928	--	6,928	37,823	12,185	50,008
1917	299	15,592	--	15,592	13,129	9,901	23,030	9,977	--	9,977	38,997	9,901	48,898
1918	297	10,076	20	10,096	11,485	6,308	17,793	9,796	--	9,796	31,654	6,328	37,982
1919	321	11,400	62	11,462	13,014	7,070	20,084	8,257	334	8,591	32,992	7,466	40,458
1920	324	12,580	--	12,580	14,617	8,616	23,233	10,802	--	10,802	38,323	8,616	46,939

See footnotes at end of table.

(Continued on next page)

Table 3. -- UNITED STATES AND CANADIAN HALIBUT LANDINGS, 1888-1966[1/] - Continued

(Thousands of pounds)

Year	Calif. and Oregon	Washington			British Columbia			Alaska			Pacific Coast		
	U.S.	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total
1921	307	11,795	--	11,795	19,735	10,157	29,892	10,467	--	10,467	42,304	10,157	52,461
1922	351	9,982	--	9,982	17,689	9,217	26,906	5,246	10	5,256	33,268	9,227	42,495
1923	1,012	8,218	5	8,223	20,922	9,107	30,029	12,051	9	12,060	42,203	9,121	51,324
1924	610	7,429	--	7,429	20,379	9,618	29,997	15,088	10	15,098	43,506	9,628	53,134
1925	697	9,821	--	9,821	22,194	7,353	29,547	10,598	--	10,598	43,310	7,353	50,663
1926	617	10,080	13	10,093	19,803	7,878	27,681	14,077	--	14,077	44,577	7,891	52,468
1927	803	11,911	6	11,917	18,326	8,460	26,786	15,446	--	15,446	46,486	8,466	54,952
1928	707	13,935	--	13,935	20,258	10,209	30,467	9,151	--	9,151	44,051	10,209	54,260
1929	965	13,080	--	13,080	19,649	9,007	28,656	14,189	33	14,222	47,883	9,040	56,923
1930	760	12,583	--	12,583	16,874	7,592	24,466	11,657	41	11,698	41,874	7,633	49,507
1931	892	15,221	13	15,234	10,604	7,770	18,374	9,722	--	9,722	36,439	7,783	44,222
1932	865	21,998	--	21,998	10,637	6,409	17,046	4,575	3	4,578	38,075	6,412	44,487
1933	736	22,231	20	22,251	8,763	8,264	17,027	6,781	2	6,783	38,511	8,286	46,797
1934	1,361	20,718	--	20,718	8,595	9,718	18,313	7,155	--	7,155	37,829	9,718	47,547
1935	1,281	22,389	--	22,389	6,927	10,202	17,129	6,543	6	6,549	37,140	10,208	47,348
1936	708	22,995	--	22,995	6,265	10,736	17,001	8,759	5	8,764	38,727	10,741	49,468
1937	697	21,728	18	21,746	7,021	11,896	18,917	8,877	3	8,880	38,323	11,917	50,240
1938	705	21,416	166	21,582	7,349	12,158	19,507	8,421	26	8,447	37,891	12,350	50,241
1939	1,013	20,580	79	20,659	9,323	13,594	22,917	7,180	15	7,195	38,096	13,688	51,784
1940	1,014	19,461	--	19,461	11,211	12,895	24,106	9,721	5	9,726	41,407	12,900	54,307
1941	1,124	19,646	60	19,706	10,037	13,033	23,070	9,148	16	9,164	39,955	13,109	53,064
1942	792	15,061	--	15,061	13,419	11,178	24,597	10,243	66	10,309	39,515	11,244	50,759
1943	1,046	13,377	95	13,472	12,309	12,801	25,110	14,169	44	14,213	40,901	12,940	53,841
1944	876	11,957	--	11,957	5,444	13,312	18,756	21,982	59	22,041	40,259	13,371	53,630
1945	756	12,693	--	12,693	4,575	14,929	19,504	20,785	192	20,977	38,809	15,121	53,930
1946	931	14,312	--	14,312	4,378	18,146	22,524	22,579	491	23,070	42,200	18,637	60,837
1947	813	6,366	270	6,636	2,585	23,889	26,474	22,524	--	22,524	32,288	24,159	56,447
1948	595	10,367	--	10,367	2,479	18,604	21,083	23,895	178	24,073	37,336	18,782	56,118
1949	625	10,367	41	10,408	4,205	18,239	22,444	21,698	641	22,339	36,895	18,921	55,816
1950	723	8,938	--	8,938	3,684	18,929	22,613	25,305	70	25,375	38,650	18,999	57,649
1951	540	11,212	--	11,212	4,388	20,484	24,872	19,189	561	19,750	35,329	21,045	56,374
1952	698	13,352	74	13,426	3,037	23,650	26,687	20,962	1,055	22,017	38,049	24,779	62,828
1953	621	14,848	50	14,898	2,020	24,762	26,782	17,173	1,041	18,214	34,662	25,853	60,515

See footnotes at end of table.

(Continued on next page)

Table 3.--UNITED STATES AND CANADIAN HALIBUT LANDINGS, 1888-1966 [1/] - Continued

(Thousands of pounds)

Year	Calif. and Oregon	Washington			British Columbia			Alaska			Pacific Coast		
	U.S.	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total	U.S.	Can.	Total
1954	1,061	17,626	154	17,780	4,224	25,240	29,464	20,769	2,132	22,901	43,680	27,526	71,206
1955	699	16,269	245	16,514	2,751	19,850	22,601	17,205	2,053	19,258	36,924	22,148	59,072
1956	772	16,157	760	16,917	3,001	22,919	25,920	21,978	1,918	23,896	41,908	25,597	67,505
1957	573	15,538	1,204	16,742	1,869	22,343	24,212	18,661	1,207	19,868	36,641	24,754	61,395
1958	[4] 732	15,923	1,963	17,886	579	23,793	24,372	19,337	2,886	22,223	36,295	28,918	65,213
1959	338	17,947	2,975	20,922	318	23,819	24,137	22,218	4,100	26,318	40,821	30,894	71,715
1960	420	16,574	3,382	19,956	1,063	26,988	28,051	20,293	3,243	23,536	38,350	33,613	71,963
1961	371	14,562	1,913	16,475	1,755	24,914	26,669	23,377	2,640	26,017	40,065	29,467	69,532
1962	392	12,390	4,133	16,523	644	24,817	25,461	27,020	5,723	32,743	40,446	34,673	75,119
1963	229	11,592	4,292	15,884	733	25,811	26,544	21,737	7,030	28,767	34,291	37,133	71,424
1964	132	9,134	2,814	11,948	562	25,703	26,265	16,551	5,071	21,622	26,379	33,588	59,967
1965	156	7,030	1,609	8,639	566	25,678	26,244	22,734	5,700	28,434	30,486	32,987	63,473
1966	149	5,092	3,037	8,129	595	24,482	25,077	24,483	4,453	28,936	30,319	31,972	62,291

[1] 1888 to 1950 from Bell, Dunlop and Freeman, I. F. C. Rept. No. 17, 1952.
[2] No figures available for California and Oregon landings until 1915, but they are known to have been inconsequential in early years.
[3] No suitable figures available until 1911 for an accurate separation of Alaska and Washington landings.
[4] Includes 276,000 pounds landed by Canadian vessels in Oregon.

Note: The quantities shown represent the eviscerated heads-off landed weight of the fish. Conversion to round weight can be made by multiplying these weights by 1.33.

Table 4. -- CATCH OF HALIBUT BY FISHING GROUNDS, 1910-66

(Thousands of pounds)

Year	Fishing grounds (Column)								
	A	B	C	D	E	F	G	B to D	E to G
1910	(1)	(1)	(1)	(1)	(1)	(1)	(1)	51,850	(1)
1911	(1)	(1)	(1)	(1)	(1)	(1)	(1)	56,931	(1)
1912	(1)	(1)	(1)	(1)	(1)	(1)	(1)	59,534	900
1913	(1)	(1)	(1)	(1)	(1)	(1)	(1)	55,436	11,107
1914	(1)	(1)	(1)	(1)	(1)	(1)	(1)	44,476	22,949
1915	273	(1)	(1)	(1)	(1)	(1)	(1)	44,023	24,460
1916	253	(1)	(1)	(1)	(1)	(1)	(1)	30,278	19,477
1917	299	(1)	(1)	(1)	(1)	(1)	(1)	30,803	17,796
1918	297	(1)	(1)	(1)	(1)	(1)	(1)	26,270	11,415
1919	321	(1)	(1)	(1)	(1)	(1)	(1)	26,602	13,535
1920	324	(1)	(1)	(1)	(1)	(1)	(1)	32,358	14,257
1921	412	5,960	20,390	10,222	9,345	5,402	730	36,572	15,477
1922	363	4,485	16,773	9,224	7,085	4,547	18	30,482	11,650
1923	1,047	3,154	15,137	9,717	12,095	9,503	671	28,008	22,269
1924	659	2,322	13,977	9,856	8,462	16,358	1,500	26,155	26,320
1925	1,203	1,995	12,655	7,987	7,312	14,848	4,663	22,637	26,823
1926	897	2,854	14,692	7,165	5,367	15,647	5,846	24,711	26,860
1927	1,193	2,846	12,669	7,419	8,183	14,440	8,202	22,934	30,825
1928	1,061	2,410	15,425	7,581	8,052	14,484	5,247	25,416	27,783
1929	1,225	1,903	12,815	9,847	6,857	15,415	8,861	24,565	31,133
1930	843	1,476	11,381	8,530	5,655	12,535	9,087	21,387	27,277
1931	923	1,410	12,827	7,390	5,095	9,513	7,064	21,627	21,672
1932	902	2,000	12,250	7,738	5,797	10,912	4,888	21,988	21,597
1933	743	2,008	12,368	8,154	7,134	12,424	3,966	22,530	23,524
1934	1,613	1,679	13,275	7,684	6,369	12,343	4,584	22,638	23,296
1935	1,489	2,080	12,885	7,852	7,691	11,530	3,821	22,817	23,042
1936	710	1,884	13,121	9,906	7,036	11,170	5,641	24,911	23,847
1937	716	2,072	14,557	9,395	5,419	12,930	5,151	26,024	23,500
1938	706	2,647	14,590	7,738	6,612	13,012	4,936	24,975	24,560
1939	1,073	1,609	17,975	7,770	5,576	13,502	4,279	27,354	23,357
1940	779	1,883	17,874	7,858	5,021	16,262	4,630	27,615	25,913
1941	332	2,444	15,757	7,806	4,302	16,119	6,304	26,007	26,725
1942	286	2,420	13,454	8,447	4,399	16,195	5,558	24,321	26,152
1943	420	2,959	14,087	8,265	5,236	15,046	7,828	25,311	28,110
1944	320	1,744	14,056	10,717	3,841	16,223	6,729	26,517	26,793
1945	401	982	14,327	9,069	3,217	16,409	9,525	24,378	29,151
1946	629	1,242	17,983	10,453	5,477	16,349	8,704	29,678	30,530
1947	430	1,144	17,344	10,164	7,112	12,734	7,519	28,652	27,365
1948	285	2,018	16,241	10,150	4,774	14,846	7,804	28,409	27,424
1949	427	2,038	15,086	9,818	5,947	15,001	7,499	26,942	28,447
1950	392	1,921	16,188	8,937	6,588	17,247	6,376	27,046	30,211
1951	319	1,577	18,905	10,126	6,370	14,491	4,586	30,608	25,447
1952	526	1,446	19,744	9,658	9,245	18,024	4,185	30,848	31,454
1953	383	1,702	22,751	8,554	8,248	14,588	4,289	33,007	27,125
1954	714	2,544	23,010	11,146	9,046	20,408	4,338	36,700	33,792
1955	612	2,223	17,533	8,988	7,147	15,915	6,654	28,744	29,716

See footnotes at end of table. (Continued on next page)

Table 4.--CATCH OF HALIBUT BY FISHING GROUNDS, 1910-66 - Continued

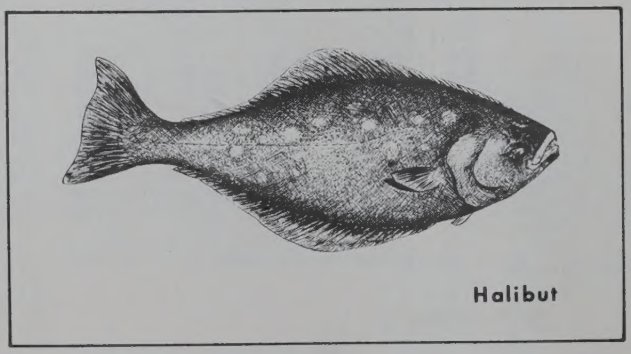
(Thousands of pounds)

Year	Fishing grounds (Column)								
	A	B	C	D	E	F	G	B to D	E to G
1956	594	1,953	18,815	14,654	5,924	16,187	9,378	35,422	31,489
1957	446	1,659	16,619	12,349	5,254	17,595	7,473	30,627	30,322
1958	357	1,852	17,337	11,369	6,544	17,977	9,777	30,558	34,298
1959	236	2,436	15,207	13,162	8,322	17,042	15,310	30,805	40,674
1960	309	2,264	16,730	12,815	5,405	15,640	18,800	31,809	39,845
1961	270	1,637	14,840	12,372	5,942	17,126	17,345	28,849	40,413
1962	312	1,457	13,891	13,315	5,566	18,478	22,100	28,663	46,144
1963	205	1,506	14,354	10,291	5,220	17,090	22,758	26,151	45,068
1964	142	1,037	11,099	7,474	5,364	17,193	17,658	19,610	40,215
1965	156	1,076	11,168	12,150	6,456	16,523	15,944	24,394	38,923
1966	141	1,219	10,096	12,120	7,402	18,363	12,990	23,435	38,755

[1] For the years 1920 and earlier, it has been possible to separate the landings with full assurance only as to whether they originated from grounds south or west of Cape Spencer. Since 1921 the catch has been assigned to the following fishing grounds:

Column A - South of Willapa Harbor
Column B - Willapa Harbor to Cape Scott
Column C - Cape Scott to Dixon Entrance
Column D - Dixon Entrance to Cape Spencer
Column E - Cape Spencer to Cape St. Elias
Column F - Cape St. Elias to Trinity Islands
Column G - Trinity Islands and Westward, including Bering Sea
Column B to D - Willapa Harbor to Cape Spencer
Column E to G - West of Cape Spencer, including Bering Sea.

Note: The quantities shown represent the eviscerated heads-off landed weight of the fish. Conversion to round weight can be made by multiplying these weights by 1.33.



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